

# Seeds: Contracting the Audience in a Play about Science

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In pursuing the question ‘what can scientists learn from theatre?’ Particularly, ‘what can scientists, *as scientists*, learn from theatre?’ this paper argues that science lacks a normative framework that theatre is capable of providing. Despite science’s well-earned epistemic reputation, there is adequate reason to question its ethical reputation, particularly at the point where cutting edge scientific technology impacts society. I consider science as operating in four categories: the scientific method; the scientific hypothesis; the scientific experiment; and the scientist’s personal character. The realms of the scientist’s hypothesis and personal character are those where social pressures are reciprocally exerted, where imaginative play mentality and epistemic values are most in evidence. Theatre can examine these realms effectively because it is able to use narratives that appeal not only to logical and social moral judgements but to emotional and visceral responses, so as to situate science in the social context in which the pressures of law, funding, experimentation, society, and personal ambition converge in ‘the game of life’.

This can be seen in the theatrical process known as ‘contracting with the audience’. I point out a spectrum of traditional narrative tropes by which science makes “contracts with” audiences. The paper draws on theories of entrainment and theatrical game-play from Peter Stromberg and Philippe Gaulier, as well as my own practice and research into the process of contracting with the audience, to propose how to reach beyond tradition and to shift normalising contracts “outside the box”. To illustrate my proposition, I examine the play *Seeds* by Annabel Soutar as directed by Chris Abraham for Crow’s Theatre and Theatre Porte Parole. *Seeds* follows the controversial court battles of Saskatchewan farmer Percy Schmeiser against agricultural-biotech corporation Monsanto, which sued him for patent infringement of its Genetically Modified Organism Roundup Ready Canola. *Seeds* helps its audience define a public arena for discourse even as it brings to our attention the factors that make this difficult to do, while making an excellent contribution to the genre of ‘Documentary Theatre’. It is a successful contract with the audience that creates a public forum for discussion about contemporary ethical debates in science, thereby merging artistic ambiguity and scientific theory.

**KEYWORDS** Plays about science, contract with the audience, dramaturgy, entrainment, “Le Jeu”, documentary theatre, genetically modified organisms

In her book *Science on Stage*, Kirsten Shepherd-Barr claims that theatre has ‘pride of place as the site for substantive interaction between the hard sciences and the humanities’ (Shepherd-Barr 2006, 1). The ready explanation is that theatre artists have always been interested in finding ways to embody the environmental forces that shape humanity and it should therefore come as no surprise that they would develop an interest in science. Shepherd-Barr suggests a number of reasons for artists to want to develop plays about science; emerging information about the sciences and the impact of technology on environments and social organization have catalyzed contemporary artists’ explorations into human perception and behaviour. My concern in this article, however, is the question, ‘what can scientists learn from theatre?’ Particularly, ‘what can scientists, *as scientists*, learn from theatre?’

To answer this question, I begin by arguing that, despite science’s well-earned epistemic reputation, we have adequate reason to question its ethical reputation, particularly in relation to the impact of cutting-edge scientific technology on society. I then turn the discussion to the theatrical process known as ‘contracting with the audience’ and explore various ways in which scientists traditionally make ‘contracts with’ plays about science. The metaphor of a contract to bridge the gap between the ‘two cultures’ of science and arts allows for a more interactive relationship between them which is necessary if we are to explore the increasing role science plays in our society. Finally, I turn to the play *Seeds* by Annabel Soutar as an example of a successful contract with the audience that creates a public forum for discussion about contemporary ethical debates in science, thereby merging artistic ambiguity and scientific theory.

## Science and theatre

This paper was developed after a discussion I had with a group of geneticists who were attending the 2001 Human Genome Odyssey, a conference on genetic science at the University of Akron. Dr Howard Ducharme, one of the conference organisers and a bio-ethics specialist in the Philosophy Department, had arranged for The New World Performance Laboratory to entertain conference delegates with a production of Heiner Müller’s *Hamletmachine*. He was proud to include the production in the programme and told me that, although it was not a play about science *topics*, he thought it would be a great fit for his audience of scientists because it ‘captured the stresses of modernist technologies on identity’. The international company performed in several languages for the multi-national delegates in what critic Linda Eisenstein called ‘a dizzying achievement of performance prowess’ (Eisenstein, 2001). Overlaps between topics of the conference and those touched on by this staging of the play included international organ trafficking among refugee populations and corporate gene patenting. However, the

majority of the audience stampeded for the door after twelve minutes. At the hotel bar later, a group of geneticists told me they had found the production alienating in the wrong way: incomprehensible and depressing. They could not decode what they experienced as an onslaught of fragmented speech, image repetition and deconstructed identities presented by the show. In talking with them, I realised that the scientist-audience did not have the artistic vocabulary to read the play, and the players had been unaware of their audience's cultural training. I was frustrated to realise that discussion of the issues seemed better suited to the bar than the theatre itself, where one of the scientists said he would never set foot again.

This incident made me think about the different sorts of aesthetic judgments theatre practitioners make relative to scientists, and also about what theatre can and ought to do to engage scientists effectively. Before I discuss artistic strategies of aligning a play with a target audience of scientists, I want to take up the argument that theatre has something to offer to scientists professionally, that is, as scientists.

First, I should clarify my position to argue why, as a person with no scientific training, I feel the necessity to engage science through theatrical work: I believe science lacks something that theatre can provide. To begin, I should note that as a member of the secular academy I vaccinate my children, ride in airplanes, argue for climate change regulations (without ever having read a complete study on the subject), and have a great amount of faith in science generally. I understand that it might be irritating for scientists to hear me critically engaging science given my lack of formal scientific training. Epistemic and ethical critiques of science have generally come from two places, religion and post-modernism. The religious critique has often focused its attacks on particular epistemic claims that scientists have made (as they relate to evolution and the origin of the universe), rather than on the methods that science uses to gather knowledge. Religious principles have also prompted a number of ethical critiques, particularly related to the sanctity of life and the dangers of 'playing God' (Messikomer *et al.* 2001, 500).

By contrast, postmodernism's critique on the epistemic basis of science and any other theory that claims universal, objective knowledge has generated anxiety among many scientists that the status of controlled, repeated, evidence-based proofs is under attack and that the objective status of experimental science must be protected. Challenges to the privilege of objective truth have been attacked by some scientists as uneducated, hypocritical, empty rhetoric or left wing conspiracy. Shepherd-Barr (2006, 53) notes that the idea that science plays 'search for some new moral vision... does not stand up to the texts themselves'. However, a theatre of science that *does* search for a moral and epistemic harmony would be useful. I hope to show that an understanding of the audience contract can help avoid what she calls 'the excesses of postmodern relativism' (54), which fail to achieve the type of engagement between theatre and science for which I argue. While I agree that at its worst, postmodernism does an injustice to those seeking universal and objective standards of truth by hiding behind a sort of relativism, at its best postmodernism can invite us to question the excesses

of modern science by questioning the objectivity of its claims (or rather those who make claims on its behalf). Theatre, I believe, is uniquely positioned to guide us between the Scylla of relativism and the Charybdis of total faith in science's objectivity.

It seems to me that the edifice of science, in which I have a great amount of faith, is divided into four categories: the scientific method; the scientific hypothesis; the scientific experiment; and the scientist. Science finds its surest foundations in its methodology and its incredible accuracy in predicting the future. However, as philosopher of science Carl G. Hempel (1981) notes, scientists are hardly exempt from making value judgments about which hypotheses to accept and which to reject. In his examination of how to evaluate different hypotheses based on induction, he draws on the work of Thomas Kuhn to argue that we pursue pragmatic considerations that have certain characteristics that are desirable for scientific theories called *desiderata* (scope, parsimony, its ability to 'fit together' with other theories, etc.). 'Thus', he notes, 'on this construal, *the scientist qua scientist does indeed make value judgements*, but they are not of a *moral* kind; rather, they reflect the value to basic research of constructing sound and information-rich accounts of the world; and these are what I would call *epistemic values*' (Hempel: 1981, 398). To understand a theory, such as gravity, we rely on experimental data, which in turn relies on scientists to incorporate that data in the form of a hypothesis by using both cognitive and evaluative *desiderata*.

The way in which we think of the relationship between the scientific method and different theories such as phrenology, evolution, or climate change raises questions about theories as particular articulations of scientific discovery. While phrenology has been dismissed, it was a theory that enjoyed widespread popularity for nearly as long as climate change has now, particularly amongst the middle class who were interested in cutting-edge science but lacked formal scientific training (much like myself). I worry about living in a world that forces me to interact daily with scientific innovations without the means to test whether the theories I believe in might be the 'phrenologies' of the future. Epidemiologist John Ioannidis (2005, 4) has shown that high levels of epistemic bias in basic biomedical research have led to a situation where 'most research findings are false for most research designs and for most fields'. While we may be reassured that science itself is the best detector of false theories, that knowledge does little to reassure us about any particular theory itself.

Furthermore, which experiments are done and the reasons for doing them have a huge effect on the direction that science takes. Compare, for example, the scientific drives behind Marie Curie's experiments in radioactivity, the modern testing of atomic weapons, and clinical trials for anti-depression drugs. Because science only makes epistemic claims rather than moral ones, it often separates the world-views that might question the benefits of such experiments from the methodological practices of those conducting the experiments themselves. The image of the 'mad scientist', willing to sacrifice 'his' soul for the pursuit of knowledge, has been popular at least since Marlowe's *Doctor Faustus*, and serves as a cautionary reminder of the perils of pursuing the instrumental manipulation of nature without a strong ethical

framework. Saunders and Savulescu (2008), in their recent examination of the scandal surrounding the experiments of Hwang Woo-Suk, note that, '[f]unding directs, if not dictates, science, because without funding, research cannot occur' (216). In support of this they cite a study that found that '15.5% of researchers at the US National Health Institute [*sic*] admitted to altering their research approach under pressure from funding sources' (216). Thus, science interacts with society not only after experimentation in the form of theories (climate change) or technologies (airplanes), but prior to experimentation in the form of funding directives.

Finally, the character of the scientist has an enormous impact on the work produced. The still recent scandal of South Korea's Dr Hwang and his fabrication of the results of experiments cloning stem cells highlights the need for a continuing critical stance towards both the epistemic and ethical claims made by scientists. Saunders and Savulescu (2008, 216) document the lessons from the Hwang case:

Hwang's case highlights that sound transnational ethical oversight is required for reliable science. It appears that Hwang was a good scientist operating in an environment that was conducive to misadventure. Hwang credited his 'success' to plentiful funds, abundant oocytes and a supportive (mostly unregulated) political and legal environment. But these, together with ambition, also created an environment for disaster. Hwang met with many pressures but few constraints; the choices he made at each juncture made his decline inevitable. The Machiavellian desire for 'community recognition and prestige' in modern science cannot be underestimated or easily mitigated.

While they note that Hwang was a 'good scientist', Saunders and Savulescu find that it was the confluence of forces that created the 'environment for disaster' that precipitated both the ethical and epistemic failures of 'Hwanggate'.

From the method of science we inductively derive our theories, which are predicated on the funding available for different types of research, which in turn rely on individual scientists who conduct their research under immense pressure. It is this triple separation between the 'truth' that the scientific method aims to achieve and the 'speaker of truth' that is the scientist that has led post-modern critics of scientific truth such as Richard Rorty to argue that the scientist is 'a new sort of priest, a link between the human and the nonhuman' (1991, 37).

As the explosion of the discipline of bio-ethics illustrates, the ethical questions raised by scientific research and experimentation are expanding in both number and scope. Saunders and Savulescu note that 'there is little ethical education in science. Ethics is seen as integral to modern medical training, but degrees in biological sciences do not appear to have kept in touch with the ethical aspects associated with their fast-paced area' (219). They recommend six strategies to improve scientific practice to avoid such scandals as 'Hwanggate': 1) better education in ethics; 2) independent monitoring and validation of journals; 3) guidelines for tissue donation; 4) fostering ethical debates around research practices in journals; 5) an international code of ethical practice; 6) fostering public involvement and

review online. It is in the realm of their first and last recommendations that I believe theatre can contribute something to science.

While formal training in bio-ethics is no doubt one way that research practices can be improved, theatre offers a unique medium by which to investigate the numerous ethical issues that arise in modern society. This is because theatre is able to use narratives that appeal not only to social moral judgements but to emotional and visceral responses, so as to situate science in the social context in which the pressures of law, funding, experimentation, society, and personal ambition converge. Before turning to a recent production of the play *Seeds* (2012) by Annabel Soutar as a particularly effective example of such contextualization and ethical prodding, I examine how to develop theatre for scientific audiences that manages to explore these issues.

### Contracting with the audience

I have argued that science lacks a normative framework that theatre is capable of providing. I now take up the question of how to discuss scientific ideas effectively through theatre in ways that scientists find engaging. In order to do this I draw on my own practice and research into the process of contracting with the audience.

A 'contract with the audience' refers to the agreement between theatre players and their audience that enables the former to communicate through mutually accepted theatre conventions, and the latter to suspend their disbelief. The phrase is employed most frequently among actors of Shakespeare, Commedia dell'Arte, and Theatre for Young Audiences because the convention of actors' direct address to their audience makes the reciprocity of the relationship — their 'contract with the audience' — highly visible. It is less visible in naturalistic theatre. As Susan Bennett says in *Theatre Audiences: A Theory of Production and Reception* (1997, 6), the convention of the 'fourth wall' often suppresses 'the (rightful) participation of the audience'. Bennett describes the full relationship between production and audience as a communication that involves much more than the actor-audience relationship. It is a complex interaction of audience expectations and interpretations, theatrical conventions, interactive relations, intended fictions of the stage world, and production over-coding such as marketing (142). Ric Knowles (2004, 201) adds that theatrical meaning for an audience depends on a 'mutually constitutive, shifting relationship with the performance text and the technologies of production'. In a shifting relationship we can expect different 'contracts with the audience' to open up. As Helen Freshwater (2009, 9–10) reminds us 'it is important to remember that there may be several distinct, co-existing audiences to be found among the people gathered together to watch a show and that each individual within this group may choose to adopt a range of viewing positions'. Theatre playwrights and directors who want to engage their audience should articulate their contract clearly to 'bring along' their mixed audiences.

There is also a more formal aspect to the contract. Bennett argues that the contract is formed, framed and limited by the dominant hegemony, from

the moment it is put into place, 'by exchange of money for a ticket which promises a seat in which to watch an action unfold. . . a *passive* role' (Bennett 1997, 204; my emphasis). However, she notes that the 'alternative theatre' of artists like Meyerhold and Brecht 'reconstitute[s] the production-reception contract as a bi-directional discussion' (24), in an 'ideological contract' that seeks more mental participation from the audience (30). While Philip Auslander (1997) has debunked Brecht's claim that epic theatre necessarily exposes the machinery of social power, Bennett's point still holds, that increased audience participation in a 'contract' opens up alternatives to the passive uni-directional tradition. Bennett rejects the idea that audience members are pre-disposed to participate from the outset, 'making him or herself part of the work' (124). She thinks that audiences want to defend themselves from 'communitas' with strangers, not rush headlong into it (39). I believe she would have been unsurprised by the exodus of the scientists in Akron, who felt assailed by violent passions performed, as far as they could tell, without a contextual frame.

In a lecture at Princeton University, Stephen Sondheim (2011) emphasised that, as a theatre practitioner, you must make a clear offer of feeling, content, scale, and style, and that in doing so you have 'signed an invisible contract' with the audience from which you 'change direction at your peril'. During the opening scenes of a play, audiences conflate speech and image into meaning, identify cultural prompts, organise chronologies, and sort through emotions. If the contract is clearly offered and the game appears inviting, we agree to immerse ourselves in a shared experience. While Sondheim insists that an audience quickly loses interest in, or becomes angry with, a contract that changes its ground rules arbitrarily, I believe that it is possible and even desirable to extend, expand or change a contract by means of transitions that communicate carefully to the audience. Successful contracts often tap popular narratives, but merely repeating dominant cultural tropes does not make for very interesting theatre (though it is often easily marketable); nor does it fulfill the type of engagement with science that most interests me. However, once a strong reciprocal engagement between audience and theatre practitioners has been established, an imaginative negotiation can expand the initial contractual agreement to include surprising territory. While the contract is necessary and cannot be arbitrarily abandoned, contracts that seek more engagement (rather than passive consumption) from their audiences are those that are disrupted and changed by the theatre practitioner.

In his book *Caught in Play: How Entertainment Works on You*, Peter Stromberg (2009) theorises the process by which we agree to immerse in an entertainment. When our attention is grabbed by something vividly familiar, Stromberg says, we start the process called 'entrainment' (86). That is, we proprioceptively imitate and exchange rhythms with our counterparts so that we resonate rhythmically, copying and not copying elements in the fictive world we are offered. If the initial rhythmic exchange is successful, our attention becomes absorbed and we voluntarily adopt a perspective from within the game: a moment that Stromberg calls the 'deictic shift' (78). Theatre practitioners traditionally call this moment where audience members translate the play into their experience, empathising and identifying with on-stage figures, one of 'suspension of disbelief'.

Film writer and critic Roland Zag's (2010) *der Publikumsvertrag (The Audience Contract)* draws on a massive film study to discover the kinds of 'heart engaging' contracts most likely to grab and keep an audience. Zag argues that stories are fundamentally about belonging and that the most effective ones follow characters struggling to overcome social inequities in order to belong: he claims that audiences are hard-wired to respond to this 'human factor' (Zag, 87). The greater the difficulties a character faces across his or her spectrum of life roles, the greater the audience's participative engagement grows, as they fill in the gaps and problem-solve on the character's behalf. The rhythms of compression and release that the audience experience when a character encounters and overcomes obstacles are interactive in that they release enormous emotional energy: they echo the rhythm of alternating effort and mastery that makes playing video-games so compelling (Hutcheon 2006, 135). In fact, this oscillating narrative rhythm is an ancient dramaturgical strategy to maintain audience attention, wherein oral story-tellers switch between positive and negative story-points to increase the sense of action.

This process of entrainment tallies with the pedagogy of acting maestro Philippe Gaulier, to whom acting is synonymous with playing with the audience. Gaulier (2006, 174) argues that 'le jeu' is the only way to place actors in an immediate-present with their audience. He teaches actors to 'invite the audience in' by offering familiar archetypal characters and role-plays. He insists that in shared periodic moments of 'fixed point', audience members enter the creative space of the actors in order to 'dream' around and about their characters (204). Gaulier (2010) explained in a bouffon workshop: 'It's like country music. The form is known completely, so you are free to feel its emotion completely, and to follow wherever it goes'. Many of his training exercises are rhythmic games that engage the audience with the tropes of earnest clown, satirical bouffon, or baroque classic. The performers then guide their audience through a roller coaster of triumphs and disasters, entraining them by using rhythms of compression and release. Audience awareness of the contract/game with the actor, and of the actor's pleasure in performing a fictitious role, is always a critical part of Gaulier's interactive theatre. His goal is the complete transformation of both actor and audience by means of the game/contract.

My own understanding of contracting the audience has benefited from a series of shows I developed with my theatre partner Pablo Felices Luna between 2005–11. We worked with 117 youth devisers who were well-versed in pop culture but inexperienced in dramaturgy. We discovered that the best way for the youth to create theatre narrative from the images, objects, and words they improvised was to be specific about the precise game they were playing with the audience. When asked to improvise, students would fall into a pattern of regurgitating familiar media tropes and predictable content, often learned from television. However, generating a critical awareness of the role-play games implicit in favourite media contracts such as 'the ugly duckling' opens a ground on which to investigate, challenge and critique these cultural tropes with an audience fully cognisant of both game and critique. Recognition of the cultural tropes available to audiences is necessary for any theatre, but a theatre that seeks a deeper engagement with its



audience must capture their attention with a novel development that alters a familiar contract. To understand this we must employ Jacques Ranciere's (2010) tactic of 'escaping the circle to start from different presuppositions' (48) in order to emancipate the passive spectator from alienated 'stultification' (10). The theatrical contract must acknowledge what the audience already knows about the world in order to have their assumptions 'reconfigured in a different regime of perception and signification' (49). Sometimes 'The Ugly Duckling' stays ugly, but is happier than the swan; or perhaps we find out that the swan is merely a duck that bleaches its wings white and dies young. Either, I feel, would represent an interesting, subversive play on a classic contract, while simply having the star remove her glasses to reveal she was beautiful all along is boring and produces passive entertainment congruent with sexist traditions.

### Scientific contracts

This brings us to the question, 'what sort of contract makes an audience of scientists sign on to participate, rather than to simply receive?' Freshwater (2009) comments that it is a mistake for theatre reviewers to construct an audience after the fact; however, it is important for directors to develop a target audience with whom to contract. Not all scientists will bring the same perspectives to bear on a given production; however, in designing any show it is important to idealise the audience and the aesthetic and ethical judgements they will bring to bear as audience members. As the artistic directors of Shunt Theatre put it, 'of course they will necessarily have an individual interpretation, but all of the audience are on the same journey' (Machon 2011, 105). While it may be a mistake for theatre reviewers to 'discursively construct' an actual audience after the fact, it is necessary for practitioners to do so beforehand, if only to develop this 'target audience' with whom to contract. Furthermore, as we will see is the case with *Seeds*, contracts that are amenable to a scientific world-view can provoke a plethora of positive reactions and audience engagements.

The reason that the Akron production of *Hamletmachine* failed to contract with the scientists in the audience was that the hegemony of the dramatic world it established depicted an artist's experience of modernist history, and an artist's reaction to a bombardment of political and technological images, with ambiguous emotional responses. This contract was incongruent with the world-view of scientists keen to specify causes and uninterested in ambiguity. What would have enabled them to sign on as scientists interested in the culture around them? As Shepherd-Barr notes, the tradition of science plays is 'primarily concerned with the moral role of the doctor or scientist, the public responsibility as well as the personal pursuit of truth' (39). Indeed, these themes form the starting point for theatre about science contracts. To highlight the playful nature of the role that contracts can play in theatre, I will now identify some scientific contracts that are readily familiar.

One of the most popular contemporary contracts is the 'Eureka' contract, in which a passion for science leads to paradigm-changing discoveries about the world. Works such as Richard Wiseman and Simon Singh's *Theatre of Science*

and Gabriel and Rebecca Morales *Marie Curie: Rogue Scientist* trade on the excitement and curiosity that we feel in the face of scientific discovery.

Perhaps the oldest scientific contract in theatre that remains popular today is the 'Mad Scientist', visible in plays such as Christopher Marlowe's *Doctor Faustus* and George F. Walker's *Science and Madness*, and films such as *Dr Strangelove*. The 'Mad Scientist' is the most recognizable scientific contract because it carries the religious critique of science that the ethical boundaries set by God are being challenged by the human ambition for knowledge. This contract draws the audience in through spectacle, the thrill of the unknown, and elements of the grotesque, alternating this stimulation with scenes of moral dread. The scientist character is so focused on instrumental rationality and the results of experimentation that he or she is unaware of the grotesque consequences of the research.

In contrast to the 'Mad Scientist', a more sympathetic portrayal of the scientist is the 'Brainy But Misunderstood' contract, which shows the biography of a great mind that is embattled by social obstacles and prejudices. Plays such as John Mighton's *The Little Years*, Andrew Moodie's *The Real McCoy*, and Hugh Whitemore's *Breaking the Code* are good examples of such a contract. These plays contract their audiences by examining the feelings of isolation and loneliness that occur when a scientist's research cannot be appreciated because of sexism, racism, or homophobia respectively. They entrain audiences by alternating between feelings of triumph when the protagonist overcomes an obstacle, and feelings of loss when their genius is suppressed.

A more complex portrayal of scientists as neither heroes nor villains can be found in plays such as Carl Djerassi's *Oxygen* and Electric Company Theatre's *The Score*. The action pursues a 'Patent Protection', wherein the scientist is a real human being competing for recognition, intimately aware of the sacrifices that they are making in the name of science. The oscillation between stubborn ambition and fragile yearning for human connection provides the engine that drives the action. The audience in this contract is sympathetic to the scientist's desire for recognition and the sacrifices made, and anxious about the possibility that their efforts will be forgotten.

An examination of the same phenomenon from a more critical perspective is the 'Corporate Scientist' contract, in which the scientist's ownership of their research goes beyond a desire for recognition to the point that ambition or a need to survive actually distorts the knowledge that is meant to benefit humanity. This contract can be seen in plays such as John Mighton's *Scientific Americans*, which plots the compromise of ethics little by little as scientists become complicit in corporate and government machinations. Scientists are shown as subject to human fallibility, trying like everyone else to survive while making professional decisions in a coercive job market.

I find that plays that have received particular praise for their engagement with science, and its impact on society, such as *Copenhagen*, *A Disappearing Number*, and *An Experiment with an Air-pump*, are the ones that transform the contracts that they initially present to the audience. Initially, contracts are useful to entrain scientists because they present what they already know in their cultural selves. Disrupting those contracts in precise ways invites them

to enter into their own deliberations about what is at stake. A strong contract that involves the audience by means of alternating interactive currents and then explores more than the initial agreement implied escapes empty moralizing and political grandstanding because each transition or alteration of the contract excites individual contemplation over what is at stake in a particular production. The Gaulier-like process of stepping in and out of the 'game' at contract transitions resembles the video game prompt 'do you want to keep playing to the next level?'; it is an opportunity to re-commit to a new contract. In describing a play's impact, a reviewer's alternation between 'I felt' and 'we felt' is often directed by the steps of the contractual relationship.

For example, Shelagh Stephenson's *An Experiment with an Air-Pump* (1998) achieves this by offering several very clear contracts: the 'Eureka' contract juxtaposed with the 'Mad Scientist' and the 'Corporate Scientist'. First, Stephenson valorises the 'eureka' moment in science when the geneticist Ellen shares her transfiguring passion for curiosity and experiment by leading her audience into Joseph Wright's famous painting and the Age of Enlightenment with its belief in perfectibility. There in 1799, the play follows the unscrupulous physician, Armstrong, in his seduction and murder of the maid, Isobel, in order to dissect her 'hump back' by which he is 'fascinated and bewitched'. A third 'corporate scientist' contract is introduced when Ellen struggles to decide whether to accept a job in foetal diagnostics with a genetic engineering firm. The ending of the play, where Ellen accepts her future role in genetic engineering despite her ethical qualms about it, is morally ambiguous. This ambiguity is created by means of dialectic and juxtaposition among the several contracts to create between them a discursive space for scientific ethics— and it is a similar discursive space that makes Anabel Soutar's *Seeds* so compelling.

### Contracting with the audience in Anabel Soutar's *Seeds*

In seeking a Canadian play that targets scientists as an audience, and that demonstrates that theatre has something definitive to offer them, I will use the play *Seeds*, by Annabel Soutar (2012) of Montreal's Theatre Port-Parole. It follows the court battles of Saskatchewan farmer Percy Schmeiser against agricultural-biotech corporation Monsanto, which sued him for patent infringement of its Genetically Modified Organism Roundup Ready Canola. The first unusual thing about *Seeds* is that it is a minutely recorded documentary play: numerous scientists contributed to and participated in its evolution, in addition to attending as audience members. *Seeds* helps its audience define a public arena for discourse even as it brings to our attention the factors that make this difficult to do, while making an excellent contribution to the genre of 'Documentary Theatre'.

Chris Abraham's production of *Seeds* was a sensation in Toronto and at Montreal's Festival des Ameriques 2012, and is currently touring across Canada. Some might say that the realism of documentary fact-collecting lends the genre more effectively to the medium of film than theatre. However, as Shepherd-Barr (2006, 46) comments on the popularity of plays about science relative to films, 'the liveness creates a frisson of uncertainty about the

outcome of any production, and a sense of shared experience between actors and audience'. It is precisely this liveness that *Seeds* capitalises on; Abraham recently won the prestigious Simonovitch award for his directorial theatricality, and the production expands the general expectation of what documentary theatre can be. Alongside its quest for facts, Soutar's play assembles theatrical metaphors from the practice of science: narrative is communicated via a sensory spectrum of images, sounds, and immersive interactions as much as by the dialogue. The mixed theatrical forms of representation are presented as part of multiple contracts with the audience that capture and disrupt familiar tropes.

The play opens with an immediate 'Eureka' contract. As the audience enter, the cast (all in lab-coats except a woman playing the four-month pregnant Playwright), interview us on the question 'What is life?' They joke about what a clichéd, heavy question it is to ask strangers, but they treat all answers with respect. An honest investigation into 'what is life' is all that is asked and this has the effect of igniting our passion of curiosity. As the prologue begins, a lab technician explains to the Playwright that DNA 'holds the key to life' (Soutar 2012, 2). Given the Playwright's pregnant state, this begs the question: from where do the lab technicians approach the question of life? As an audience member, I jump immediately to an in-story perspective by identifying with the Playwright character, and I entrain in the oscillating rhythm of her quest: 'I need to know' versus 'I can't get at the truth'. So committed am I to the quest of the Playwright that I am already absorbed when she visits Percy Schmeiser on his farm to investigate his challenge to the Monsanto lawsuit (see Figure 1).



FIGURE 1 Percy Schmeiser persuading The Playwright in the 2013 production of *Seeds*. Photo of Liisa Repo-Martell and Eric Peterson by Guntar Kravis.

This brings in a new 'Tradition vs. Progress' contract as the personable Percy describes his difficulties with the new patent laws that 'say you can't use the seed the next year that's left over from your crop' (14). His fundamental argument is that the traditional practices of farmers are being criminalised by new patent laws that protect big business. Percy is a warm character whose love for his land encourages empathy with the 'small farmer'. His 'Tradition vs. Progress' contract is conveyed through powerful images of his farm enabled by Julie Fox's simultaneous, multi-location setting. However, still more contracts continue to open as we are drawn deeper into the play. The Playwright's research reveals Percy layer by layer: first as the gutsy farmer then, disturbingly, as a combination of 'victim, opportunist and self-publicist' (Cushman, 2012).

When the action of the play moves us into the courtroom, we enter another new contract where we expect the corrupted figure of the 'corporate scientist' to stand tall. 'Monsanto... requires any farmer who acquires the seed to sign what's called a Technology Use Agreement (TUA), whereby the farmer undertakes *not* to retain or sell or distribute the seeds to other people' (16). It is not the GMO technology that Percy resists, but the changing configuration of patent law that has arisen from the use of genetic modification in the field of agriculture. This 'Corporate Scientist' contract continues throughout the play, and Percy is portrayed as the David to Monsanto's Goliath in a media campaign launched on his behalf by Sister Catharine Fairburn. However, we are given reason to question the moral relevance of the 'corporate scientist' when it is pitted against the 'Patent Protection' contract.

The representatives of the 'corporate scientist' (in this case represented by a patent lawyer) seek to pass themselves off as the victims of damages, given that they have sacrificed (time and money) in their pursuit of knowledge. They persuade us that in their 'Patent Protection' contract, they have succeeded in producing research that feeds the world at great cost to themselves. Monsanto scientists deserve recognition for doing this, in the form of profits. Both the court-room tropes familiar to us from the 'Corporate Scientist', and the science-documentary images of the 'Patent Protection' contract are cleverly parodied by Abraham's production. Double-casting enables a large cast of lawyers, witnesses and commentators yet, because they never leave the stage, we see the actors flipping characters — some of which are humorously broad — in full view. The way that the 'Corporate Scientist' and the 'Patent Protection' contracts are constructed by media is humorously exposed to the audience and I am drawn into another contract: 'Rock-and-Roll science' shows the role of the media in shaping opinion on genetically modified organisms (GMOs).

The Schmeiser case is taken up internationally. Percy, in his own mediated representation of his case, manages to mobilise large numbers of the international community concerned about GMO's to protest the injustice the 'corporate scientist' is committing. Percy is awarded The Navdanya Award in India for his fight against Monsanto for the right to use his own seeds. He becomes something of a celebrity in his ongoing struggle. Furthermore, he is

joined by activists who introduce the 'Anti-science Conspiracy' contract by arguing that GM foods present a health hazard to those who consume them.

In the course of both the trial and the play, the issues have changed, from Percy's right to re-use seed vs. Monsanto's right to profit from their 'invention', to the safety of GMOs. The 'Corporate Scientist' contract is now pitted against the 'Anti-science Conspiracy' contract. The familiar 'Anti-science Conspiracy' contract reacts to familiar 'International Protest Movement' visual tropes, which portray under-informed people over-reacting. Actor-operated live cameras initiate a screen-stage tension by simulating on-screen press conferences filmed in 'India', 'South Africa' and 'America' by means of minor costume props shot from creative angles. The audience see the convincing media image on screen at the same time as it is being creatively forged on stage: it is a demonstration of how the media construct international news stories (including my own opinions about the Schmeiser case prior to attending *Seeds*).

The actors engage the audience through direct address: I have already played roles as the Playwright's confidante, as the courthouse jury, and even as the field under discussion as farmer Percy 'finishes a row' by handing a seed to each audience member. Now I play the public targeted both by anti-GMO spokespeople and by Monsanto's team of representatives. Each different role-play reminds me that I'm participating in a doubled, fictive-yet-real-documentary experience, moreover, in Roland Zag's terms, all my 'human factor' buttons are pressed. Stylised images or actions accompany these 'human factor' moments and, kinetically, the production entrains me by sudden, wowing rhythm shifts. A toy tractor, live-projected into a massive image on screen, starts its engine. A bag of seed falls suddenly from above. A jug of milk poured into a glass overflows to flood the floor. Although I am thoroughly entrained and re-engage repeatedly with the different contracts, these images (seed, milk, the enormous prairie sky) help me to never quite forget the original quest to discover 'what is life?'

Soutar makes this question resonate in the tension between the 'Patent Protection' and 'Anti-science' contracts. Halfway through Act Two, the Playwright asks two stakeholders that oppose GMO's and one that supports them, 'but is there any conclusive proof that this modification process will produce organisms that are dangerous to ingest?' She is told:

Clark: Well, in general, the science is lagging behind.

Shiva: The science is non-existent because it's not being funded.

Altosaar: It's not being funded because it's *junk science* (87).

The tension between the views is unresolved and maintains the dynamic force of the play as much as the tension between tradition and progress. I commit my attention through detailed interviews with scientists about the unknowable potential impact of genetic splicing on the whole plant, and intense court depositions on why the modification of one patented gene might imply, in practice, ownership of all the rest. Moral right is lost in complexity, and the debate between the 'Corporate Scientist' contract and the 'Patent Protection' contract is never resolved. However, this isn't because all truth has collapsed into relativism, but because the truths that are being

examined are conditioned by self-interest (whether that of Percy or Monsanto) and social institutions (the law and the media). Seeing this, the audience doesn't give up on the ethics but engages with the issues from their own particular vantage points. A penultimate scene with Dr Barry Commoner frames the various opposing contracts in a social context. He argues that, 'money has distorted the scientific process' such that 'almost the entire output of biology research today is being translated into private enterprise. This is a *total transformation* that has taken place in the past fifty years' (120). I now consider the larger cultural landscape that enables the other contracts: I forget the individual agents and address the social issue at stake, 'what is life and who owns it?'

In the final scenes, the likelihood is raised that Percy lied at his trial when denying that he purchased the seed illegally (from another farmer), claiming instead that it blew onto his land against his wishes. 'To get that much seed, to seed a thousand acres, you'd need five thousand pounds of seed. . .It comes in fifty pound bags; that's one hundred bags of seed' (100). Some members of the audience might feel that the 'Corporate Scientist', usually a villain, has here been vindicated. However, during the course of the play, incomplete evidence, ideological bias, and moneyed interest has forced the audience to question whether Percy's lie is morally relevant to the big question of 'what is life and who owns it?' The moral conundrum over Schmeiser's use of GMO seeds is dwarfed by the emerging complexities of world food futures and yet, as an audience member, I feel I have been equipped to consider the issues from a variety of angles so as to find my personal perspective.

As the play ends with a five-to-four Supreme Court ruling against Schmeiser, the Playwright's story moves from the past into the future. She describes how Schmeiser's lobby to protect farmers' ancient practices of saving their seed is spreading worldwide. The 'to be continued' emphasis on the future enables me to accept that none of the contracts we pursued have been fulfilled just yet, and that further living research is required. I exit determined to stay informed. Our lack of a pat solution for the problems is far less important than our collaborative effort to explore them.

*Seeds* carefully negotiates expansions, advances, and changes to its initial contract. Soutar's multiple contracts capture the ways that media myth-making, corporate power, complicity and duplicity, make it difficult for both scientists and citizens to know where the truth lies. *Seeds* exemplifies the difficulties of negotiating not only a normative framework for the issue of genetic modification, but the forum in which citizens can discuss it. The play is unlikely to change the opinion of an anti GMO health-food storeowner, such as an audience member at the Toronto production who complained about the 'sympathetic' treatment of Monsanto. It probably will not alter the beliefs of a professional GMO scientist, but such a scientist can relish a conversation that introduces new perspectives and provides a structure for debate richer than the usual binary media approach. Dr Illimar Altosaar, who was featured in the play as a GMO expert, expressed his enthusiasm to me, saying that he was 'enthralled by the overall quality of this theatre experience'.

## Conclusion

*Seeds* is an excellent model of theatre-science production in which the interactive, game-playing dramaturgy of ‘contracting the audience’ opens a public space where the concerns of artists, scientists, and citizens can be shared. The Playwright’s quest for the truth is intensified by the obstacle that it is a layered, multiple truth requiring the decoding of numerous relational contracts. The movement between contracts can be strong enough to draw a very diverse audience over that troubled terrain without leaving them mired in relativism, where truth and common understanding play no role. Indeed, the dialectical interaction of the competing contracts invites audience members to consider alternative perspectives without attempting to force them out of their initial perspectives. This gives a sense of interactivity to the production that helps to bring an audience along, past individual moral beliefs and prejudices, entraining us from one contract to another so that we engage with contradictory moments without cognitive restraint. I believe that clear contracts function to tour the audience through the play as a group that, despite shifts and morphs according to individual frames of reference, agrees to be a group. One was affected by the interactive relationship at the end, as though one had debated a controversial point with multiple interlocutors from varying perspectives on the science — one emerged without the sense that the debate was definitively won or lost, but with more confidence in a social discourse where the stakes are known.

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